

Application No. 10/716,724
Amendment and Response dated April 14, 2006
Reply to Office Action of December 14, 2005

Remarks

The Examiner has rejected claims 3, 4, 6-8, 15, 17-19, 28, 34-36 and 50-53 under 35 U.S.C. §103(a) as being unpatentable over Schwede et al. U.S. Patent No. 5,757,389 (Schwede) considered alone.

The Examiner has also rejected, as being unpatentable under 35 U.S.C. §103(a) over Schwede:

Claims 24, 31-33, 41 and 42 in view of Stellmach et al. U.S. Patent No. 5,172,987 (Stellmach);

Claims 26 and 27 in view of Fassler et al. U.S. Patent No. 5,910,813 (Fassler);

Claim 38 in view of Stellmach and Fassler; and

Claim 20 in view of Smith U.S. Patent No. 6,637,958.

Claims Rejected over Schwede Only

Schwede discloses an ink jet label printer that uses non-contact sensors fixed to the printer frame to measure the height of the top surface of each of a series of magazine bundles above the supporting conveyor. The sensor output provides an open loop control of a motor that adjusts the height of a print head arm above the conveyor.

Claims 3 and 4:

Schwede does not teach sensing the position of the substrate relative to the carriage. Schwede senses the position of a substrate moving on a conveyor from a sensor 14 on an extension arm 11 on a fixed stand 8. Applicant claims “sensing the position of the substrate relative to the carriage”. Applicant illustrates doing this with sensor 40a or 40b mounted on the carriage. There is no suggestion by Schwede of sensing the position of the substrate relative to the carriage. No *prima facie* case of obviousness is made for claims 3 and 4.

Claims 6-8:

Claims 6 and 8 are being canceled. Claim 7 is being rewritten in independent form. Claim 7 provides “sensing the distance between the print head carriage and locations on the surface at which ink is to be jetted”. For the reason stated with respect to claim 3 and 4, no *prima facie* case of obviousness is made for claim 7.

Claims 15, 17-19, 28, 50 and 51:

Claims 15, 17, 50 and 51 are being canceled. Claim 18 is being rewritten in independent form. Claim 18 provides that the control system includes “a feedback device that senses the gap between the print heads and the substrate”. Claims 19 and 28 are dependent on claim 18. Again, for the reason stated with respect to claim 3, 4 and 7, no *prima facie* case of obviousness is made for claims 18 and 19.

Claims 34-36, 52 and 53:

Claims 34, 52 and 53 are being canceled. Claim 35 is being rewritten in independent form. Claim 35 provides that “the detecting of the position of the surface of the substrate includes detecting the distance between the print heads and the substrate”. Claim 36 is dependent on claim 35. Again, for the reason stated with respect to claim 3, 4, 7, 18 and 19, no *prima facie* case of obviousness is made for claims 35 and 36.

Claims Rejected over Schwede in View of Stellmach

Stellmach discloses a pin-type dot matrix impact printer that uses a roller on an axis fixed to a print head carriage to maintain the print head at a fixed distance from the surface of a substrate during printing. This distance is not adjustable. Either the roller, or a lever that extends in front of the roller, engages the leading edge of a substrate and physically lifts the print head, along with the carriage and track, onto the substrate surface. Substrates of differing thicknesses are accommodated. In addition, the lifting motion of the print head track assembly is detected and the height of the carriage support structure is adjusted with a motor to minimize the mechanical motion by pre-adjusting the print head height, lessening the jolting of the head when the roller encounters the leading edge of the substrate.

Applicant submits that there is no motivation to combine Schwede and Stellmach, and even if there were, the resulting combination would still not present a *prima facie* case of the obviousness of what is being claimed by Applicant.

First of all, the print head of the Schwede ink jet printer does not come into contact with the substrate at all, so there is no problem with “jolting” the print head upon

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encountering the leading edge by a sensor roller. The problem solved by Stellmach is a problem of Stellmach alone, who uses a contact roller. It is a problem not encountered by Schwede, who uses a non-contact sensor. So there would be no motivation to combine Stellmach and Schwede. The combination would make Schwede's printer worse, not better.

Secondly, a combination of Schwede and Stellmach still would not produce a printer having a sensor that senses the distance between a print head or print head carriage and the surface of a substrate. Stellmach's fixed roller maintains a fixed relation between the print head of Stellmach and a substrate. Once the print head moves as the roller rides over the substrate, the absolute position of the print head causes a motor adjustment, but there is no sensing of a print head to substrate gap. Accordingly, there is no *prima facie* case of obviousness of any of the independent claims discussed above.

Claims 24, 31-33, 41 and 42:

Claims 24, 31, 32 and 41 are being canceled. Claims 33 and 42 are being rewritten in independent form. They recite two sensors mounted on each side of a transversely moving printhead. These features are useful for bidirectional printing. Claim 33 expressly recites that the printheads can perform bidirectional printing. Claim 42 recites the transmitting of information acquired by the sensors on the carriage from a controller to a motor. Neither Schwede nor Stellmach have this feature. Therefore, there is no *prima facie* case of obviousness of claims 33 and 42.

Claims Rejected over Schwede in View of Fassler

Claims 26 and 27:

Claims 26 and 27 are being canceled.

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Claims Rejected over Schwede in View of Stellmach and Fassler

Fassler discloses the printing on rigid substrates.

Claim 38:

Claim 38 is being canceled.

Claims Rejected over Schwede in View of Smith

Claim 20:

Claim 20 is being canceled.

* * *

For the reasons stated above, it is submitted that claims 3, 4, 7, 18, 19, 28, 33, 35, 36 and 42 are allowable, and that the application is in condition for allowance. Accordingly, an early allowance is respectfully requested.

Respectfully submitted,

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